11 June 1970

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MEMORANDUM FOR THE RECORD

SUBJECT: Brief Analysis of the CMC KeyProcessing System

1. A relatively new method of preparing input to a computer system is now offered by the KeyProcessing System (KPS) of the Computer Machinery Corporation (CMC). The CMC system uses a single supervisory console to which are attached up to 32 key stations. Operators enter data from the key stations to a magnetic disk unit in the console. A key station serves a dual function; it can either enter data initially or verify data already stored in the disk by the same or another key station. Periodically the disk is dumped onto a magnetic tape via a unit that is also a part of the supervisory console. The tape is then ready for input into a computer.

2. The concept is thus radically different from the key punch-verifier systems conventionally employed by most data processing installations today. According to the local CMC representatives, there are now installed in the United States a total of 50 of their systems. In the Washington area there is one thus far, installed during May 1970 at the Federal National Mortgage Association headquarters. The following analysis is based in part on a demonstration 4 June at the FNMA for a group of five representatives of the DDP.

3. To begin, the obvious disadvantage of the CMC system is its total dependence on a single device, namely the supervisory console. When that device goes down, the input system goes down. Despite the manufacturer's assurance that their modular design and rapid response time will put the CMC system back on the air "within an hour or two," the prospective system user must remain mindful of this vulnerability.

4. A second consideration, which may or may not turn out to be a disadvantage of the CMC system, is its cost. If we were to convert our Document Conversion Unit, as it is currently equipped and staffed, to CMC we would be increasing equipment rental costs from $2115 per month to $3500. (The derivation of these figures is given in Appendix 1.) Even if we availed ourselves of the lower rates offered for five-year rentals, the cost would still go up to $2919 per month. To justify the 38% to 65% cost increase we would want some assurance that we were getting at least a comparable increase in efficiency. The following sub-paragraphs examine certain characteristics of the CMC

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equipment which are claimed by the manufacturer to give it a considerable edge in efficiency over a conventional key punching and verifying system.

     a. The CMC key station will accept record lengths of up to 240 characters, thus obviating the repetitive keying now required for records longer than 80 characters.

     b. The CMC system makes available to each of its key stations 1000 stored input programs; a program is called with four key strokes and no drum card changes are required.

     c. Duplication of fields and skipping occur at electronic, rather than mechanical, speeds.

     d. The same machine serves as both keyer and verifier. This versatility affords space savings, since with the CMC equipment there is no need to have more machines than there are operators. This characteristic is reflected in Appendix 1, where seventeen CMC machines are assumed to replace sixteen key punches and nine verifiers.

     e. Training time is shorter for the CMC equipment than it is for the key punch. Principal reason is that there is no need for the operator to learn to prepare program cards. (My source for this observation is the supervisor at FNMA, who has taught both systems.)

     f. Errors sensed by the operator in the CMC system can be corrected immediately, before the record has been written onto the disk. No time is lost in ejecting and partially duplicating a card.

     g. The CMC system is relatively quiet and hence less fatiguing. This should reduce error rates.

     h. Time spent by the computer operators in converting cards to tape is eliminated by the CMC system.

Since, with one exception, all of the arguments offered in the preceding paragraph in favor of the CMC equipment have as their source the company's local representative, I can offer no independent judgment yet as to their validity. There do appear to be a number of organizations outside of the Washington area that have by now completed several months of experience with the CMC equipment. Attachments A, B, and C present some tentative evaluations of that equipment based in part on the experiences of those users. My recommendation would be that we make some direct checks with some of the users as part of our continuing effort to upgrade our data input capability.

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Atts.

Approved For Release 2002/05/07 : CIA-RDP78-01092A000100090009-2

SYSTEM	COSTS PER MONTH				
	Hardware	Software	Supplies	Total	% Increase over Present System
Present System:					
15 ea. 029 Keypunches @ 77.00[1]	1155.00				
Cards for 15 machines @ 13.00/machine[2]			195.00		
9 ea. 059 Verifiers @ 85.00[1]	765.00				
Sub-totals	1920.00		195.00	2115.00	0%
KPS on 1-year lease:					
1 ea. Supervisory console	1375.00				
17 ea. Key Stations @ 100.00[3]	1700.00				
Operator analyses[4]		150.00			
Automatic batch transfer[4]		275.00			
Sub-totals	3075.00	425.00		3500.00	65%
KPS on 5-year lease:					
1 ea. Supervisory console	1170.00				
17 ea. Key stations @ 82.00[3]	1394.00				
Operator analyses[4]		125.00			
Automatic batch transfer[4]		230.00			
Sub-totals	2564.00	355.00		2919.00	38%

NOTES:

1) Machines currently in use are 15 key punches and 9 verifiers. This is about right for the number of operators assigned to the Document Conversion Unit. (Source: [   ]) 25X1A

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2) Cost of 15,000 cards, the approximate production per month of a beginning key punch operator, is $12.75.
(Sources: [   ])

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3) Number of operators currently employed for both key punches and verifiers totals 17. (Source: [   ]) This figure has been used in calculating the number of KPS key stations required, since a single key station serves both to eneter and to verify data.

4) These programs are considered essential by the manufacturer. (Source: Harold Astrich of CMC.)

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